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BIOLOGY

Time Remaining: 44/45 (Minutes)

Q.1

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Which of the following statements about photosynthesis is wrong?

- (a) Carbon dioxide molecules are bound into carbohydrates during the second half of the process
- (b) It is a catabolic process that releases the energy stored in glucose molecules
- (c) Oxygen is released as a waste product
- (d) May occur in both prokaryotic and eukaryotic cells

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 44/45 (Minutes)

Q.2

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

How does photosynthesis occur?

- (a) Glucose is broken down into carbon dioxide using the energy of the sun
- (b) The products of the light reaction are used to create glucose from carbon dioxide
- (c) The sunlight directly powers ATP synthase, which catalyzes the creation of glucose
- (d) The electrons from metals are used for chemiosmosis

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Time Remaining: 44/45 (Minutes)

Q.3

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

NADPH and ATP, formed during light reaction of photosynthesis have:

- (a) Assimilating & reducing power respectively
- (b) Reducing & assimilating power respectively
- (c) Oxidizing & reducing power respectively
- (d) Reducing & oxidizing power respectively

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 44/45 (Minutes)

Q.4

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

What is wrong about dark reaction of photosynthesis?

- (a) It only takes place in dark
- (b) It utilizes the light directly
- (c) It is independent from light reaction
- (d) All of these

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Time Remaining: 44/45 (Minutes)

Q.5

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

CO₂ and water during photosynthesis:

- (a) React with each other
- (b) Show their action at same time
- (c) Is reduced and oxidized, respectively
- (d) None of these

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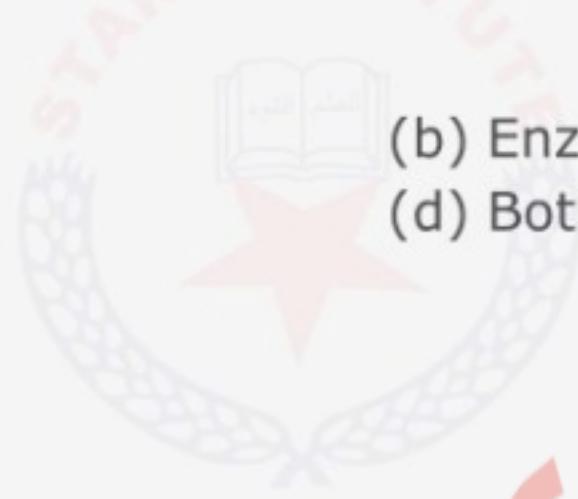
Q.6

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Photolysis is the splitting of water in the presence of:

- (a) Light
- (c) Oxygen
- (b) Enzymes
- (d) Both 'a' & 'b'



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- B
- C
- D

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Time Remaining: 43/45 (Minutes)

Q.7

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Dark reaction of photosynthesis is also called as:

- (a) C4 cycle
- (b) Light dependent reaction
- (c) Calvin cycle
- (d) All of these

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Time Remaining: 43/45 (Minutes)

Q.8

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Unidirectional flow of e^- in non-cyclic photophosphorylation is:

- (a) PS II $\xrightarrow{e^-}$ PS I $\xrightarrow{e^-}$ NADP $\xrightarrow{e^-}$ water
- (b) Water $\xrightarrow{e^-}$ PSII $\xrightarrow{e^-}$ PS I $\xrightarrow{e^-}$ NADP
- (c) PS I $\xrightarrow{e^-}$ NADP $\xrightarrow{e^-}$ water $\xrightarrow{e^-}$ PS II
- (d) Water $\xrightarrow{e^-}$ PS I $\xrightarrow{e^-}$ PS II $\xrightarrow{e^-}$ NADP

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Time Remaining: 43/45 (Minutes)

Q.9

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

The head and tail of chlorophyll are made up of _____ respectively:

- (a) Pyrrole & Tetrapyrrole
- (b) Porphyrin & Phytin
- (c) Porphyrin & Phytol
- (d) Tetrapyrrole & Magnesium

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- C
- D

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Time Remaining: 43/45 (Minutes)

Q.10

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Which of the following connect the primary and secondary processes of photosynthesis?

- (a) NADPH₂
- (b) ATP & NADPH
- (c) ATP
- (d) Ferridoxins

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- B
- C
- D

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Time Remaining: 43/45 (Minutes)

Q.11

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

In non-cyclic photophosphorylation, the electron emitted by P_{680} is replaced by electron from:

- (a) NADP
- (b) Water
- (c) Ferredoxin
- (d) Chlorophyll-a



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- B
- C
- D

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Time Remaining: 43/45 (Minutes)

Q.12

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Which of the following molecules are formed in the Calvin cycle while using ATP?

- (a) 1,3-bisphosphoglycerate and Ribulose bisphosphate
- (b) Ribulose bisphosphate and Glyceraldehyde-3-phosphate
- (c) 3-phosphoglycerate and Ribulose bisphosphate
- (d) Glyceraldehyde3-phosphate and Glucose

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**Time Remaining: 43/45 (Minutes)****Q.13****Test 2 Unit 2 Bioenergetics A****Biology Unit Wise****Which of the following statements is true for the Calvin cycle?**

- (a) It does not depend on sunlight to operate
- (b) It is fueled by glucose
- (c) Carbon dioxide is converted into water and oxygen
- (d) It occurs in the nucleus of a cell

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Time Remaining: 43/45 (Minutes)

Q.14

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

In the Calvin cycle, what is the first product formed after the entry of carbon dioxide?

- (a) Glucose
- (b) Ribulose-1,5-bisphosphate
- (c) 3-Phosphoglycerate
- (d) Glyceraldehyde-3-phosphate

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- A
- B
- C
- D

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Time Remaining: 43/45 (Minutes)

Q.15

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

In the Calvin cycle, which molecule combines with carbon dioxide?

- (a) Glucose
- (b) 3-phosphoglycerate
- (c) Glyceraldehyde3-phosphate
- (d) Ribulose-1,5-bisphosphate

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Correct Answer:

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Time Remaining: 42/45 (Minutes)

Q.16

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Arrange the two following lists into their most appropriate pairs:

Column I	Column II
A - Antennae pigment molecules	I - Dioxygen (O_2) generation
B - Thylakoid membrane	II - Reduction of ferredoxin
C - Photosystem II	III - Electron transport chain
D - Photosystem I	IV - Absorption of light

- (a) A-I, B-II, C-III, D-IV (b) A-IV, B-III, C-I, D-II
(c) A-IV, B-III, C-II, D-I (d) A-II, B-IV, C-I, D-II

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Time Remaining: 42/45 (Minutes)

Q.17

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Both photosynthesis and respiration require:

- (a) Chloroplasts
- (b) Sunlight
- (c) Mitochondria
- (d) Cytochromes

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- B
- C
- D

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Time Remaining: 42/45 (Minutes)

Q.18

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Which one of the following is not true about the light reactions of photosynthesis?

- (a) NADPH is not produced in cyclic electron transport in light reactions.
- (b) The flow of electrons from water to NADP in non-cyclic electron transport produces one ATP.
- (c) Reactions of the two photosystems are needed for the reduction of NADP.
- (d) P₆₈₀ and P₇₀₀ are the reaction centers of PS I and PS II respectively.

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Time Remaining: 42/45 (Minutes)

Q.19

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

The pathway that will produce oxygen during photosynthesis is:

- (a) Krebs cycle
- (b) Non-cyclic electron flow
- (c) Light-independent reactions
- (d) Cyclic electron flow

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- B
- C
- D

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Time Remaining: 42/45 (Minutes)

Q.20

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Calvin cycle consists of how many phases?

- (a) 1
- (b) 2
- (c) 3
- (d) 4

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- A
- B
- C
- D

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Time Remaining: 42/45 (Minutes)

Q.21

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

3-Phosphoglycerate is formed during _____ phase of C3 cycle:

- (a) Preparatory
- (b) Oxidative
- (c) Reduction
- (d) Carbon fixation

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 42/45 (Minutes)

Q.22

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Where does the Calvin Cycle occur?

- (a) Thylakoid
- (b) Stroma
- (c) Lumen
- (d) Mitochondria

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Correct Answer:

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- B
- C
- D

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Time Remaining: 42/45 (Minutes)

Q.23

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Which of the following is not a reactant of the Calvin Cycle?

- (a) NADPH
- (b) ATP
- (c) Oxygen
- (d) Carbon dioxide

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 41/45 (Minutes)

Q.24

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

When carbon first enters the Calvin cycle, what molecule does it combine with?

- (a) 3PG
- (b) G₃P
- (c) RuBP
- (d) ATP

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- A
- B
- C
- D

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Time Remaining: 41/45 (Minutes)

Q.25

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Calvin cycle is involved in the:

- (a) Synthesis of carbohydrates
- (b) Synthesis of NADPH
- (c) Synthesis of ATP
- (d) Hydrolysis of water

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Time Remaining: 41/45 (Minutes)

Q.26

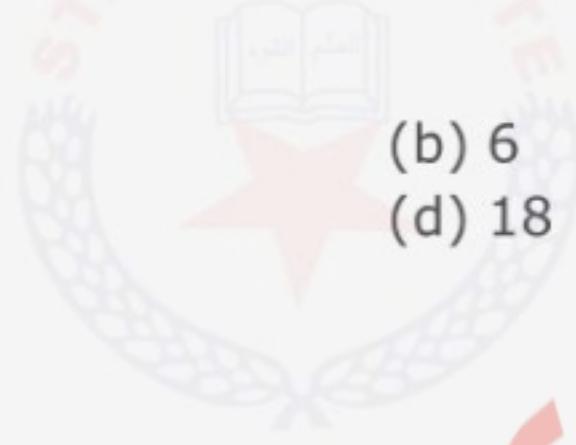
Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

How many molecules of 3-phosphoglycerate is synthesized from the reaction between 6CO_2 and 6RuBp ?

- (a) 3
(c) 12

- (b) 6
(d) 18



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Correct Answer:

- A B C D

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Time Remaining: 41/45 (Minutes)

Q.27

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

How many ATP and NADPH molecules are used in the reduction phase to convert 3-phosphoglycerate to glyceraldehyde-3-phosphate?

- (a) 6 ATP & 6 NADPH
- (b) 6 ATP only
- (c) 12 ATP & 12 NADPH
- (d) 12 NADPH only

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 41/45 (Minutes)

Q.28

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

How many glyceraldehyde-3-phosphates are required to synthesize one glucose molecule?

- (a) 2
- (b) 3
- (c) 6
- (d) 12

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- B
- C
- D

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Time Remaining: 41/45 (Minutes)

Q.29

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

C₃ cycle involves all the steps except:

- (a) Reduction
- (b) Carbon fixation
- (c) ATP synthesis
- (d) Regeneration of RuBP

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- B
- C
- D

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Time Remaining: 41/45 (Minutes)

Q.30

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

How many ATP and NADPH are used for the regeneration of 6RuBp molecules?

- (a) 12ATP and 6NADPH
- (b) 12ATP only
- (c) 6ATP and 6NADPH
- (d) 6ATP only

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Time Remaining: 41/45 (Minutes)

Q.31

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

The initial CO_2 acceptor in C3 cycle is:

- (a) 3-Phosphoglycerate
- (b) RuBP
- (c) Rubisco
- (d) G_3P

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 41/45 (Minutes)

Q.32

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

The unstable 6-carbon compound in Calvin cycle breaks down into:

- (a) Two 3-carbon compounds
- (b) Three 2-carbon compounds
- (c) Six 1-carbon compounds
- (d) Six 3-carbon compounds

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Time Remaining: 41/45 (Minutes)

Q.33

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

ATPs produced in each Calvin cycle are:

- (a) 0
- (b) 1
- (c) 3
- (d) 6

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 40/45 (Minutes)

Q.34

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

For the formation on one ATP and one NADPH, the Z-scheme will run:

- (a) 1-time
- (b) 2 times
- (c) 3 times
- (d) 6 six times

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 40/45 (Minutes)

Q.35

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

Choose the wrong statement:

- (a) PS-I involves in light reactions first and PS-II involves later on
- (b) PS-I absorbs photons
- (c) Oxygen is not liberated in PS-I
- (d) All the statements are wrong

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Correct Answer:

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Time Remaining: 40/45 (Minutes)

Q.36

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

How many G₃P molecules are yielded during one Calvin cycle?

- (a) 1
- (c) 5
- (b) 2
- (d) 6

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 40/45 (Minutes)

Q.37

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

How many CO_2 molecules are yielded during one Calvin cycle?

- (a) 0
- (b) 1
- (c) 3
- (d) 6

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- B
- C
- D

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Time Remaining: 40/45 (Minutes)

Q.38

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

All of the following are involved in both cyclic and non-cyclic photophosphorylation except:

- (a) Plastocyanin
- (b) Photosystem I
- (c) Plastoquinone
- (d) Ferredoxin

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- B
- C
- D

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Time Remaining: 40/45 (Minutes)

Q.39

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

During chemiosmosis of photosynthesis, the pumping of protons is:

- (a) Across outer membrane of chloroplast
- (b) Across inner membrane of chloroplast
- (c) From stroma to thylakoid lumen
- (d) From thylakoid lumen to stroma

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Correct Answer:

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Time Remaining: 39/45 (Minutes)

Q.40

Test 2 Unit 2 Bioenergetics A

Biology Unit Wise

The pathway that will produce oxygen during photosynthesis is:

- (a) Electron transport pathway
- (b) Non-cyclic electron pathway
- (c) Light-independent reactions
- (d) Cyclic electron pathway

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- B
- C
- D

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By: Prof. M. Umair Bhatti

Bioenergetics 'A'

UNIT TEST 2 (Unit 2)

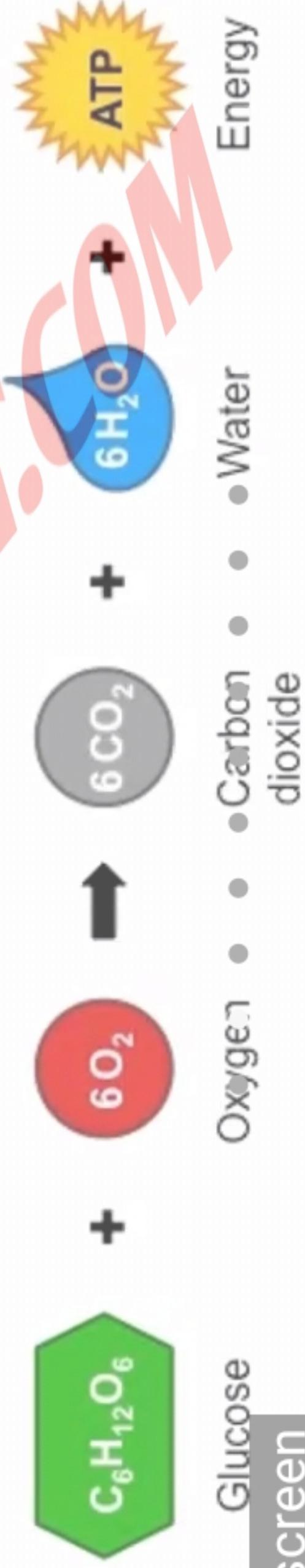
01

Which of the following statements about photosynthesis is wrong?

- (a) Carbon dioxide molecules are bound into carbohydrates during the second half of the process

(b) It is a catabolic process that releases the energy stored in glucose molecules

- (c) Oxygen is released as a waste product
(d) May occur in both prokaryotic and eukaryotic cells



02

How does photosynthesis occur?

- (a) Glucose is broken down into carbon dioxide using the energy of the sun

(b) The products of the light reaction are used to create glucose from carbon dioxide

- (c) The sunlight directly powers ATP synthase, which catalyzes the creation of glucose
- (d) The electrons from metals are used for chemiosmosis



03

NADPH and ATP, formed during light reaction of photosynthesis have:

- (a) Assimilating & reducing power respectively
- (b) Reducing & assimilating power respectively**
- (c) Oxidizing & reducing power respectively
- (d) Reducing & oxidizing power respectively

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04

What is wrong ~~about~~ dark reaction of photosynthesis?

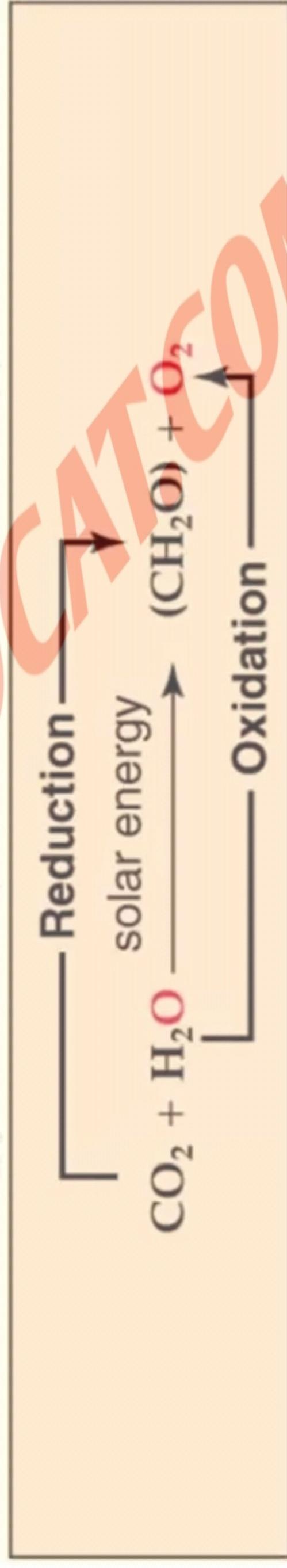
- (a) It only takes place in dark
- (b) It utilizes the light directly
- (c) It is independent from light reaction

(d) All of these

05

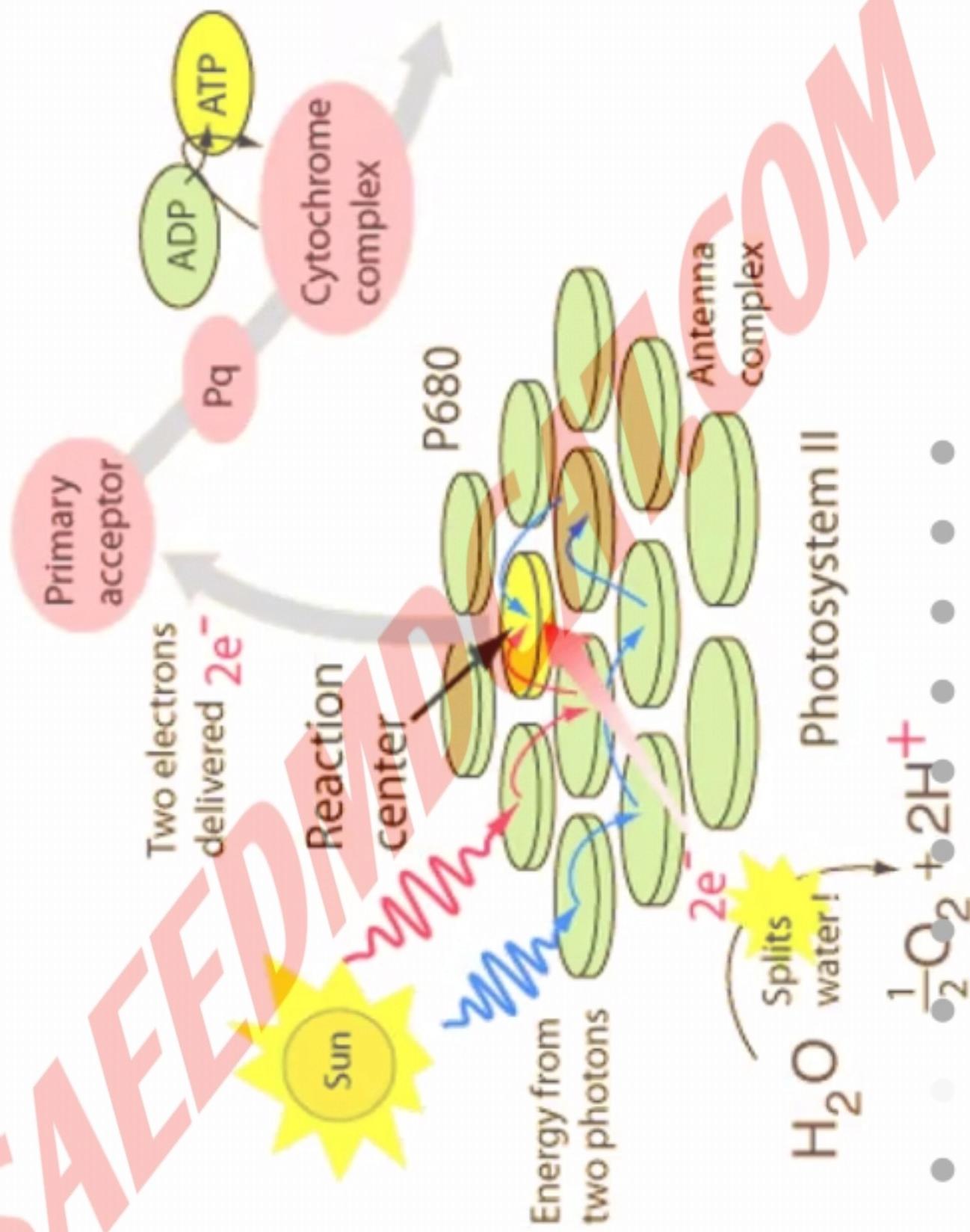
CO₂ and water during photosynthesis:

- (a) React with each other
- (b) Show their action at same time
- (c) Is reduced and oxidized, respectively**
- (d) None of these



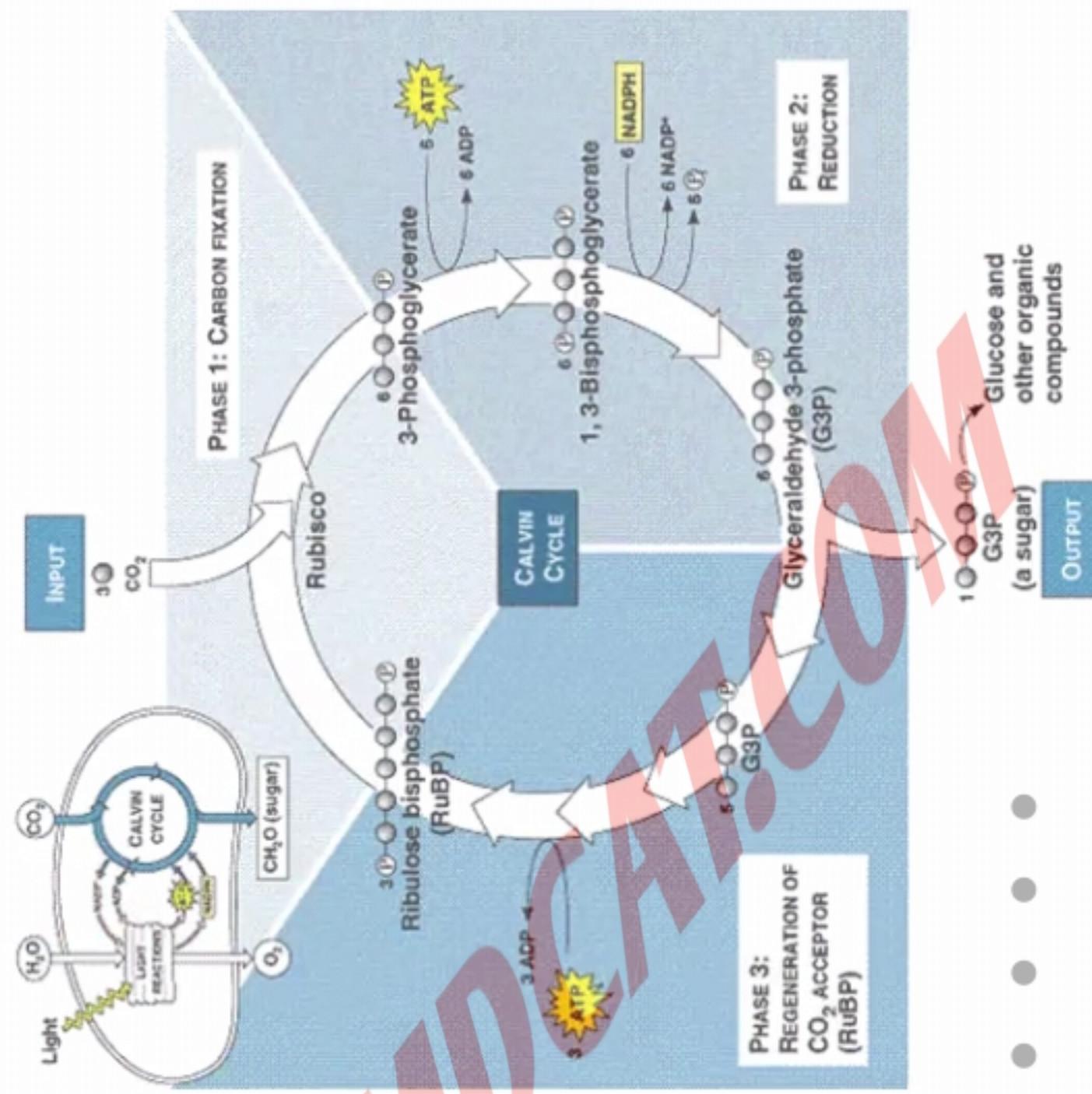
Photolysis is the splitting of water in the presence of:

- (a) Light
- (b) Enzymes
- (c) Oxygen
- (d) Both 'a' & 'b'**



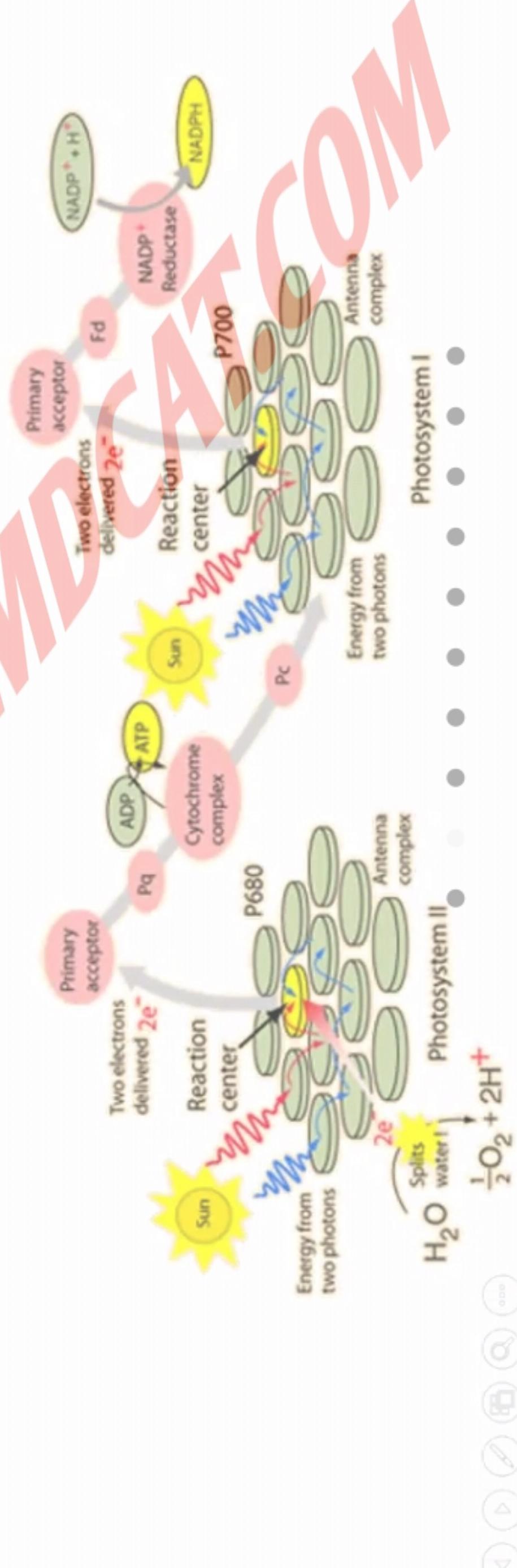
~~WISEREDM~~ Dark reaction of photosynthesis is also called as:

- (a) C₄ cycle
- (b) Light dependent reaction
- (c) Calvin cycle**
- (d) All of these



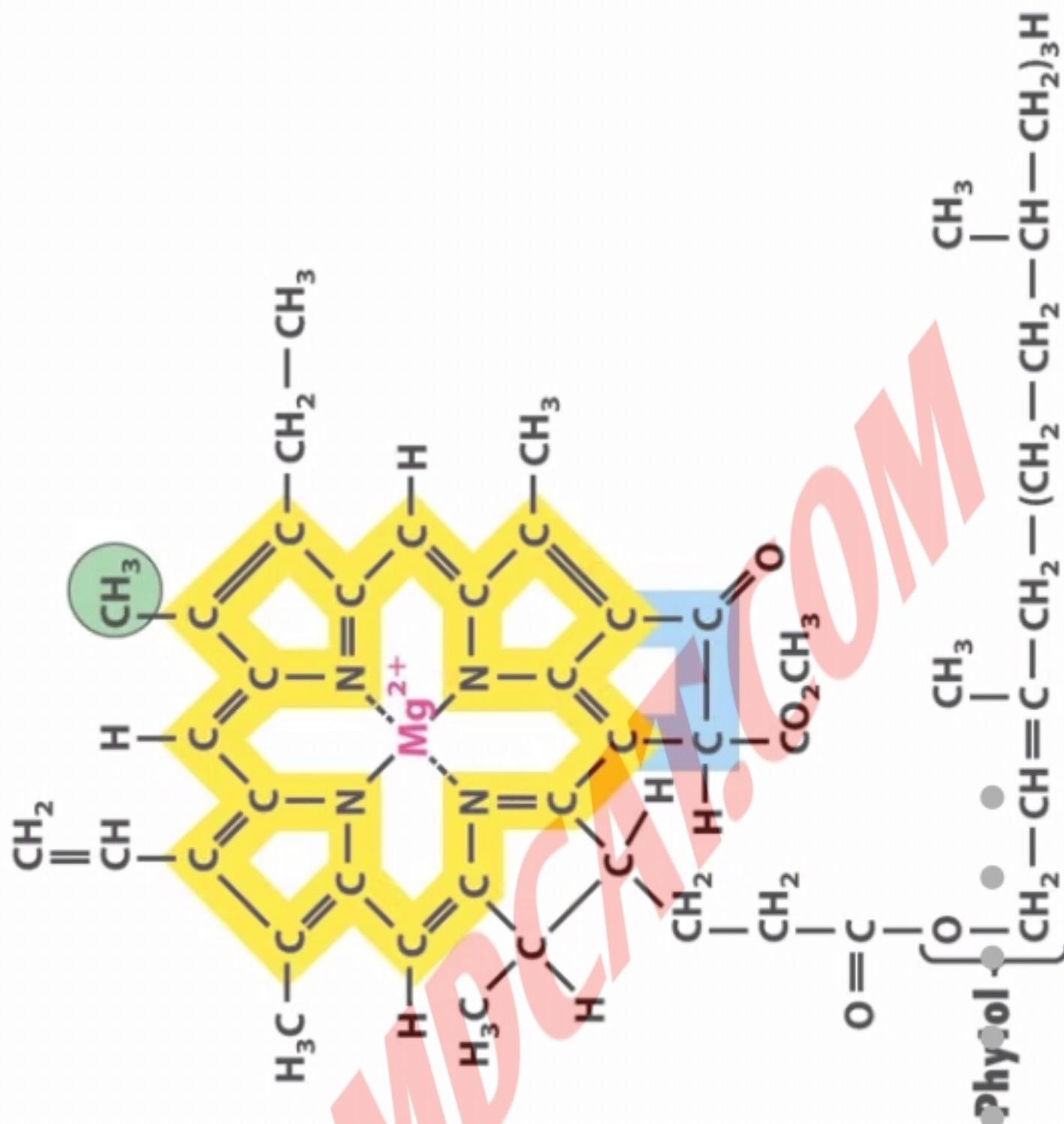
Unidirectional flow of e- in non-cyclic photophosphorylation is:

- (a) PS II $\xrightarrow{e^-}$ PS I $\xrightarrow{e^-}$ NADP $\xrightarrow{e^-}$ Water
- (b) Water** $\xrightarrow{e^-}$ **PS II** $\xrightarrow{e^-}$ **PS I** $\xrightarrow{e^-}$ **NADP**
- (c) PS I $\xrightarrow{e^-}$ NADP $\xrightarrow{e^-}$ Water $\xrightarrow{e^-}$ PS II
- (d) Water $\xrightarrow{e^-}$ PS I $\xrightarrow{e^-}$ PS II $\xrightarrow{e^-}$ NADP



The head and tail of chlorophyll are made up of respectively:

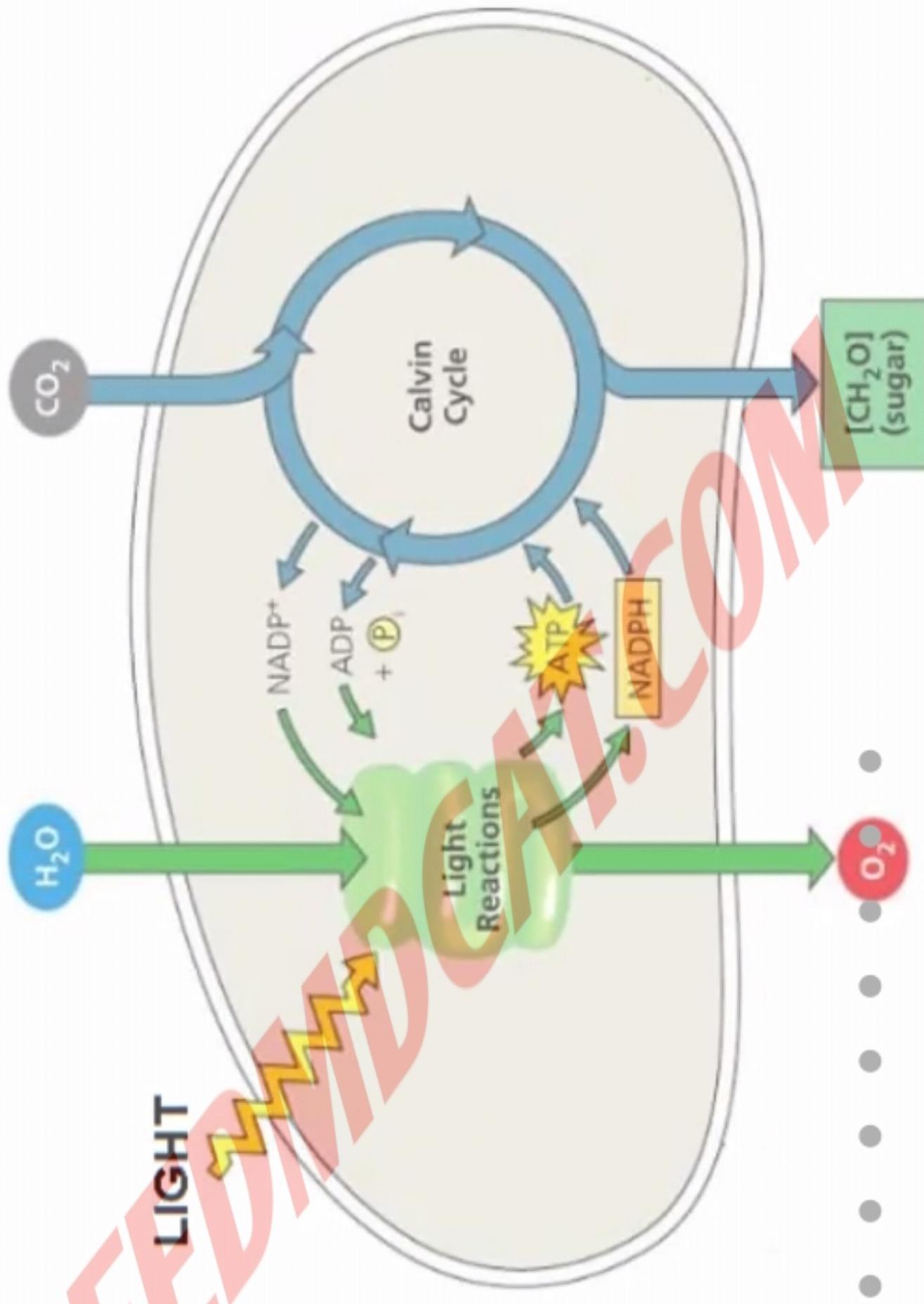
- (a) Pyrrole & Tetrapyrrole
- (b) Porphyrin & Phytin
- (c) Porphyrin & Phytol**
- (d) Tetrapyrrole & Magnesium



10

Which of the following connect the primary and secondary processes of photosynthesis?

- (a) NADPH₂
- (b) ATP & NADPH**
- (c) ATP
- (d) Ferridoxins



11

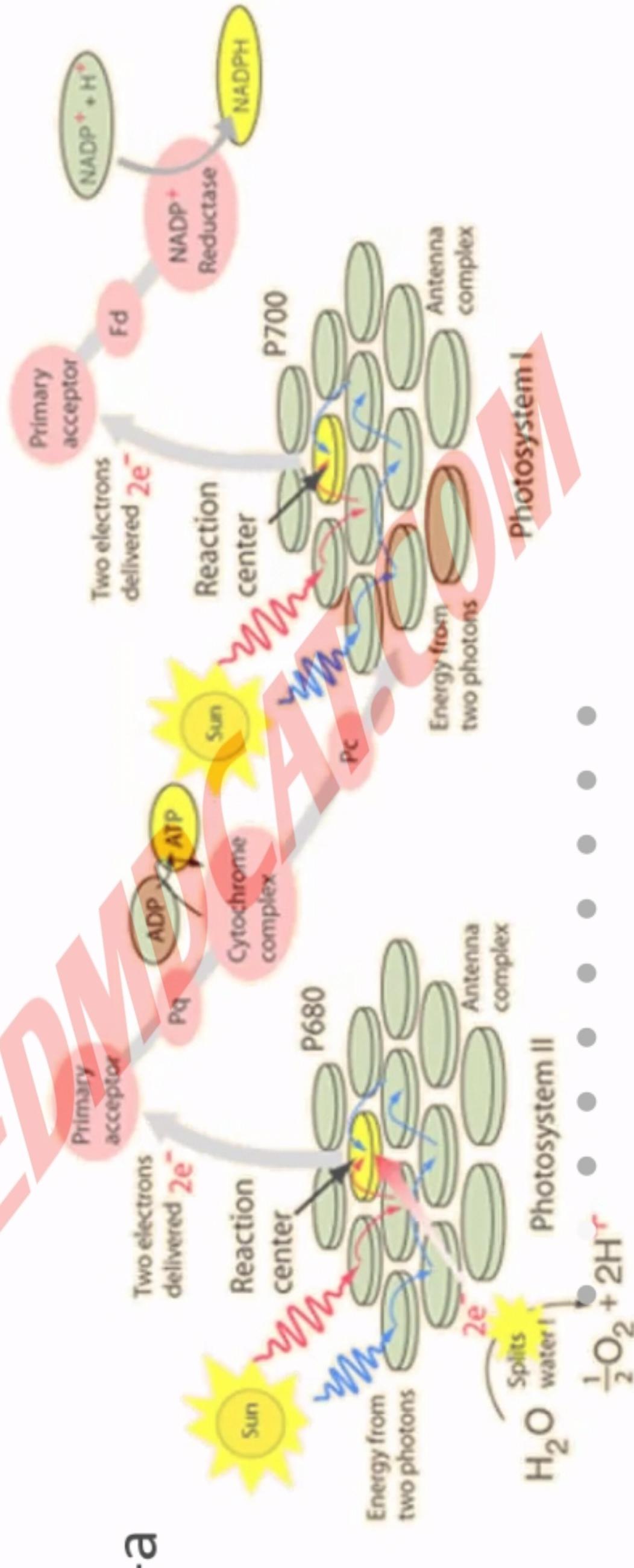
In non-cyclic photophosphorylation, the electron emitted by P₆₈₀ is replaced by electron from:

(a) NADP

(b) Water

(c) Ferredoxin

(d) Chlorophyll-a

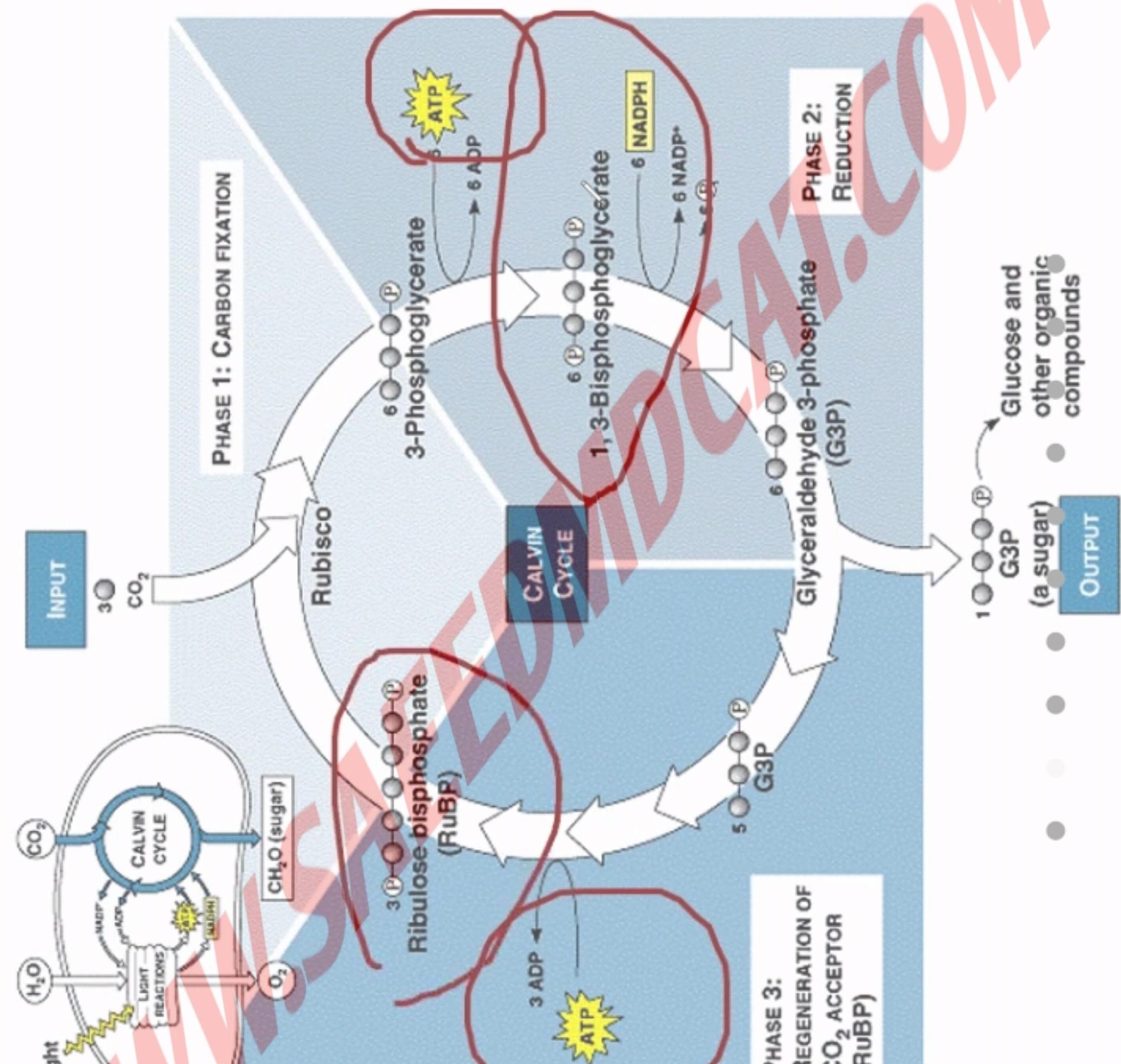


12

Which of the following molecules are formed in the Calvin cycle while using ATP?

(a) **1,3-bisphoglycerate and Ribulose bisphosphate**

- (b) Ribulose bisphosphate and Glyceraldehyde-3-phosphate
- (c) 3-phosphoglycerate and Ribulose bisphosphate
- (d) Glyceraldehyde-3-phosphate and Glucose



13

Which of the following statements is true for the Calvin cycle?

(a) It does not depend on sunlight to operate

- (b) It is fueled by glucose
- (c) Carbon dioxide is converted into water and oxygen
- (d) It occurs in the nucleus of a cell

14

In the Calvin cycle, what is the first product formed after the entry of carbon dioxide?

- (a) Glucose
- (b) Ribulose-1,5-bisphosphate
- (c) 3-Phosphoglycerate**
- (d) Glyceraldehyde-3-phosphate

C

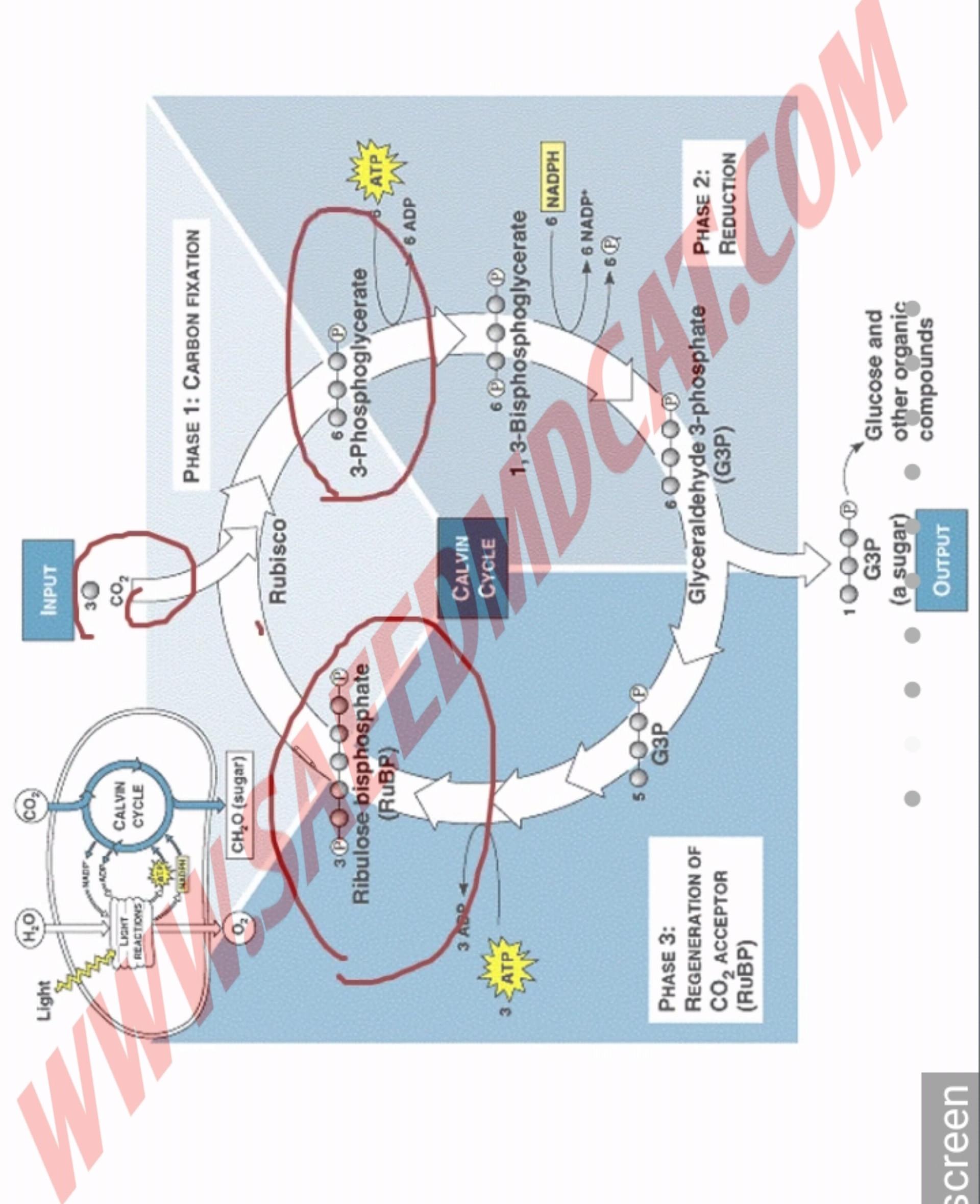
O

C.

15

In the Calvin cycle, which molecule combines with carbon dioxide?

- (a) Glucose
- (b) 3-phosphoglycerate
- (c) Glycereraldehyde-3-phosphate
- (d) Ribulose-1,5-bisphosphate**



16

Arrange the two following lists into their most appropriate pairs:

Column I	Column II
A - Antennae pigment molecules	I - Dioxygen (O_2) generation
B - Thylakoid membrane	II - Reduction of ferredoxin
C - Photosystem II	III - Electron transport chain
D - Photosystem I	IV - Absorption of light

- (a) A-I, B-II, C-III, D-IV
(b) A-IV, B-III, C-I, D-II
(c) A-IV, B-III, C-II, D-I
(d) A-II, B-IV, C-I, D-II

Both photosynthesis and respiration require:

- (a) Chloroplasts
- (b) Sunlight
- (c) Mitochondria
- (d) Cytochromes**

18

Which one of the following is not true about the light reactions of photosynthesis?

- (a) NADPH is not produced in cyclic electron transport in light reactions.
- (b) The flow of electrons from water to NADP in non-cyclic electron transport produces one ATP
- (c) Reactions of the two photosystems are needed for the reduction of NADP

(d) P_{680} and P_{700} are the reaction centers of PS I and PS II respectively reactions

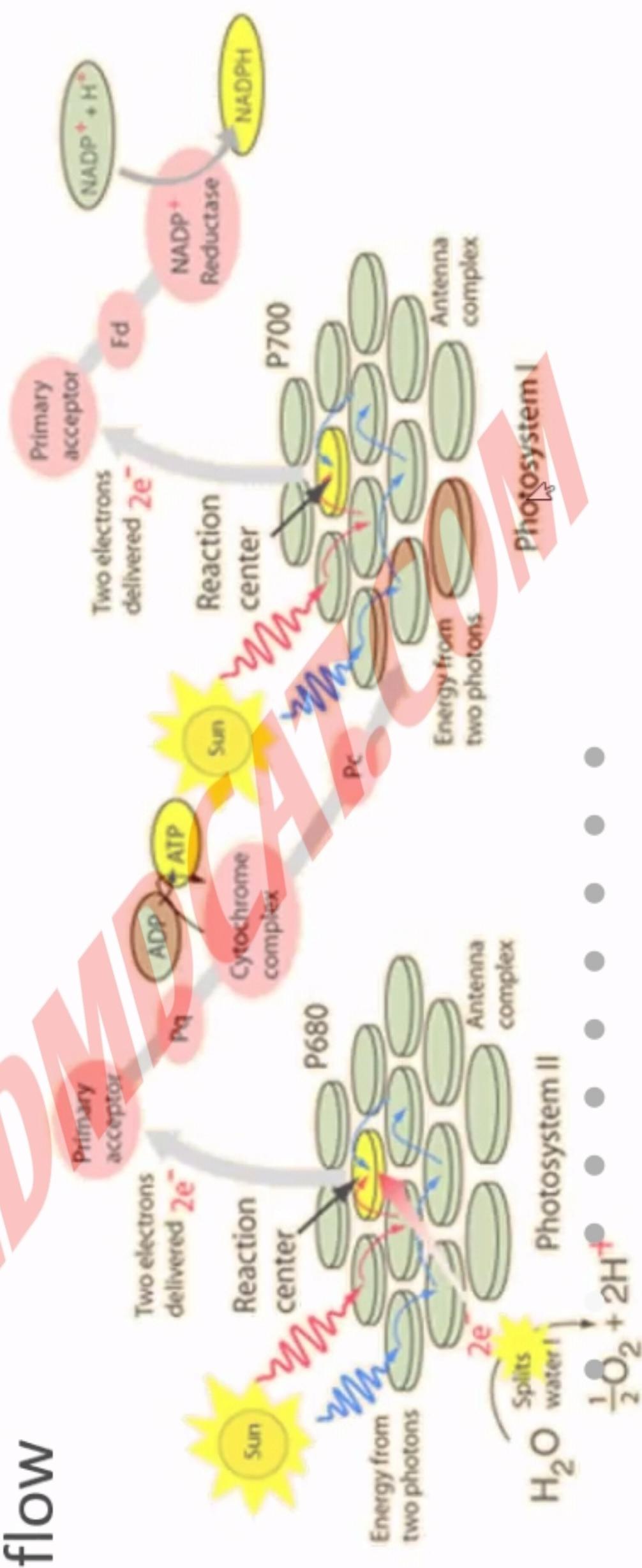
The pathway that will produce oxygen during photosynthesis is:

(a) Krebs cycle

(b) Non-cyclic electron flow

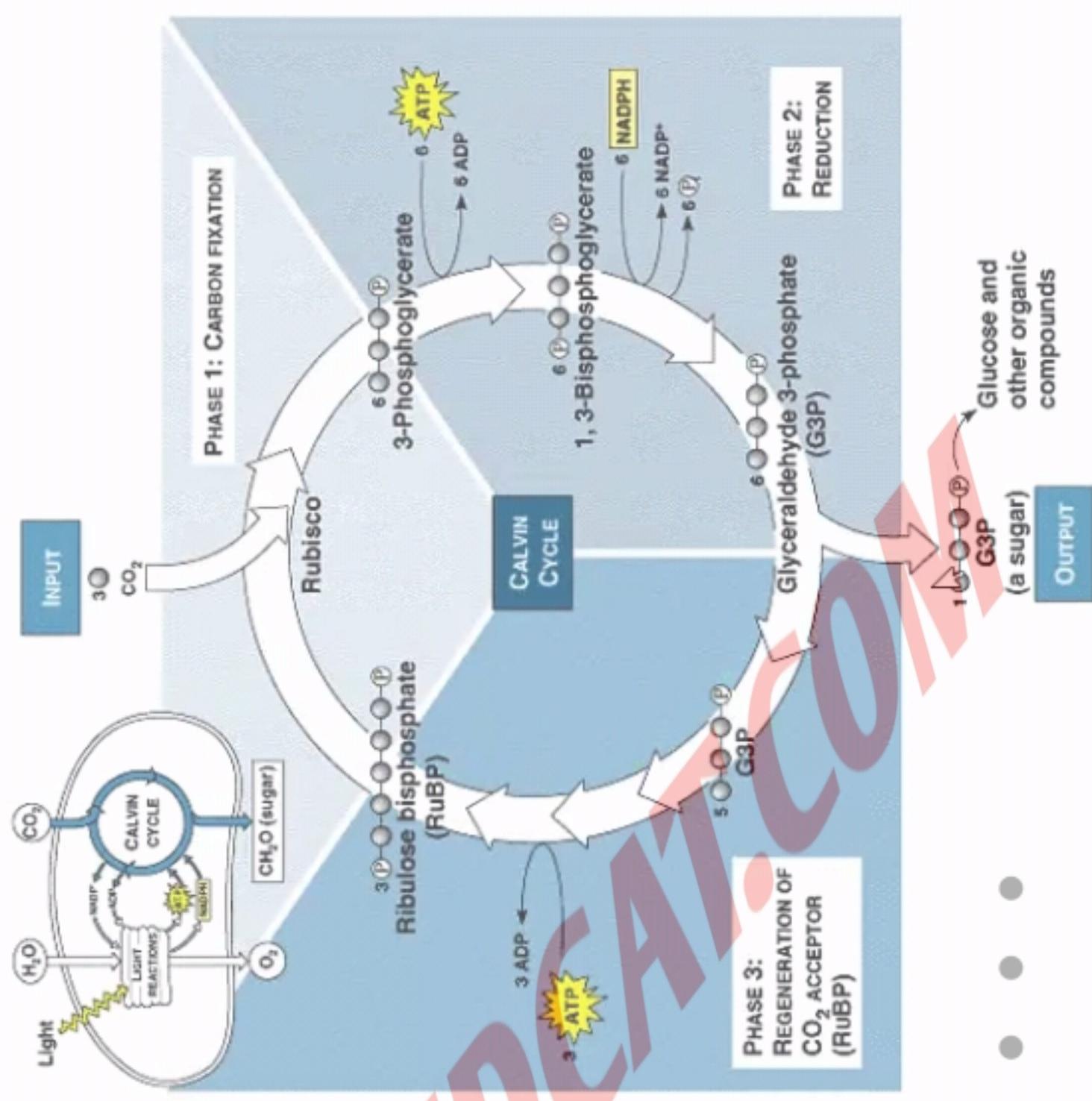
(c) Light-independent reactions

(d) Cyclic electron flow



Calvin cycle consists of how many phases?

- (a) 1
- (b) 2
- (c) 3**
- (d) 4



21

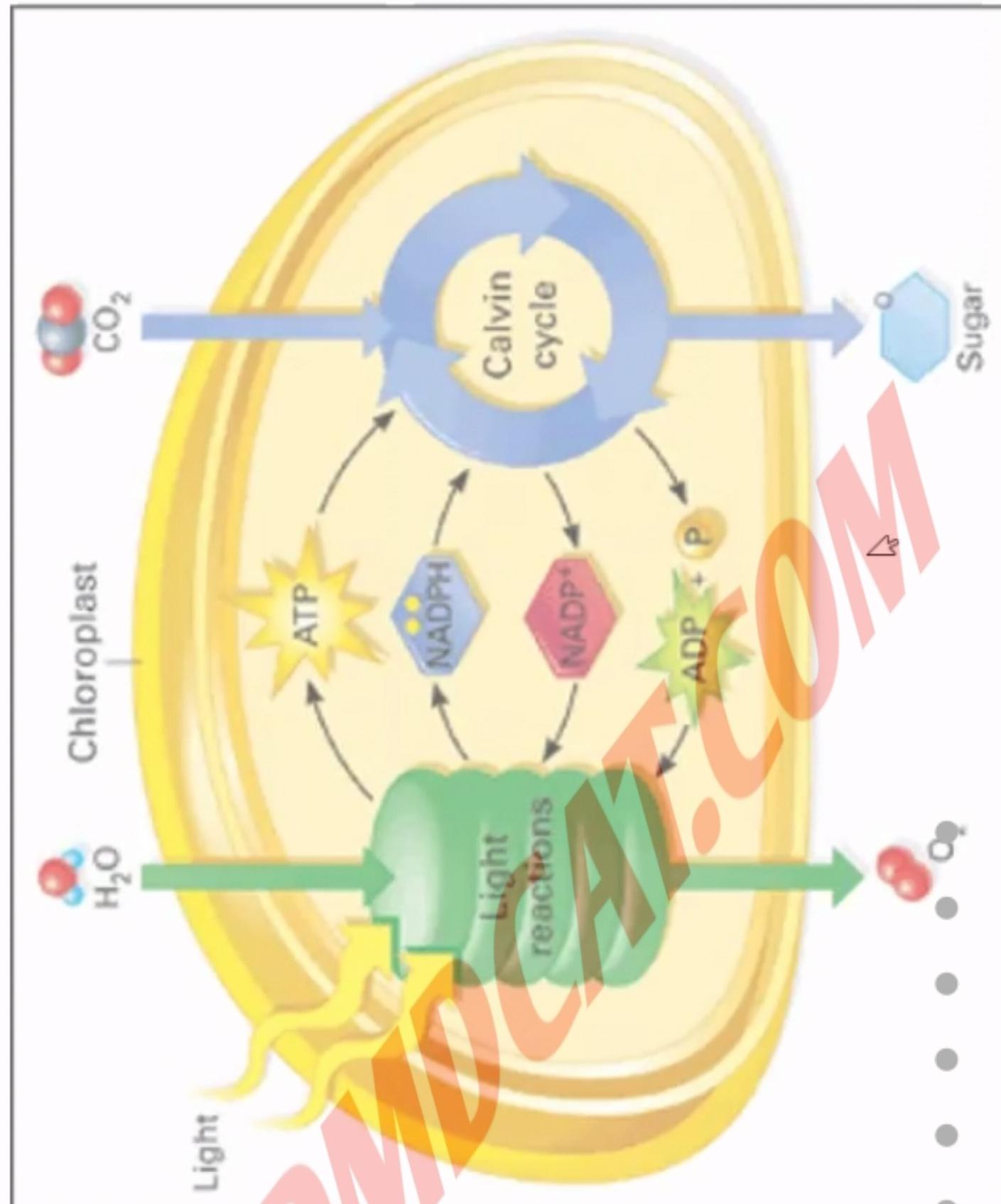
3-Phosphoglycerate is formed during _____ phase of C₃ cycle:

- (a) Preparatory
- (b) Oxidative
- (c) Reduction
- (d) Carbon fixation**



Where does the Calvin Cycle occur?

- (a) Thylakoid
- (b) Stroma**
- (c) Lumen
- (d) Mitochondria



23

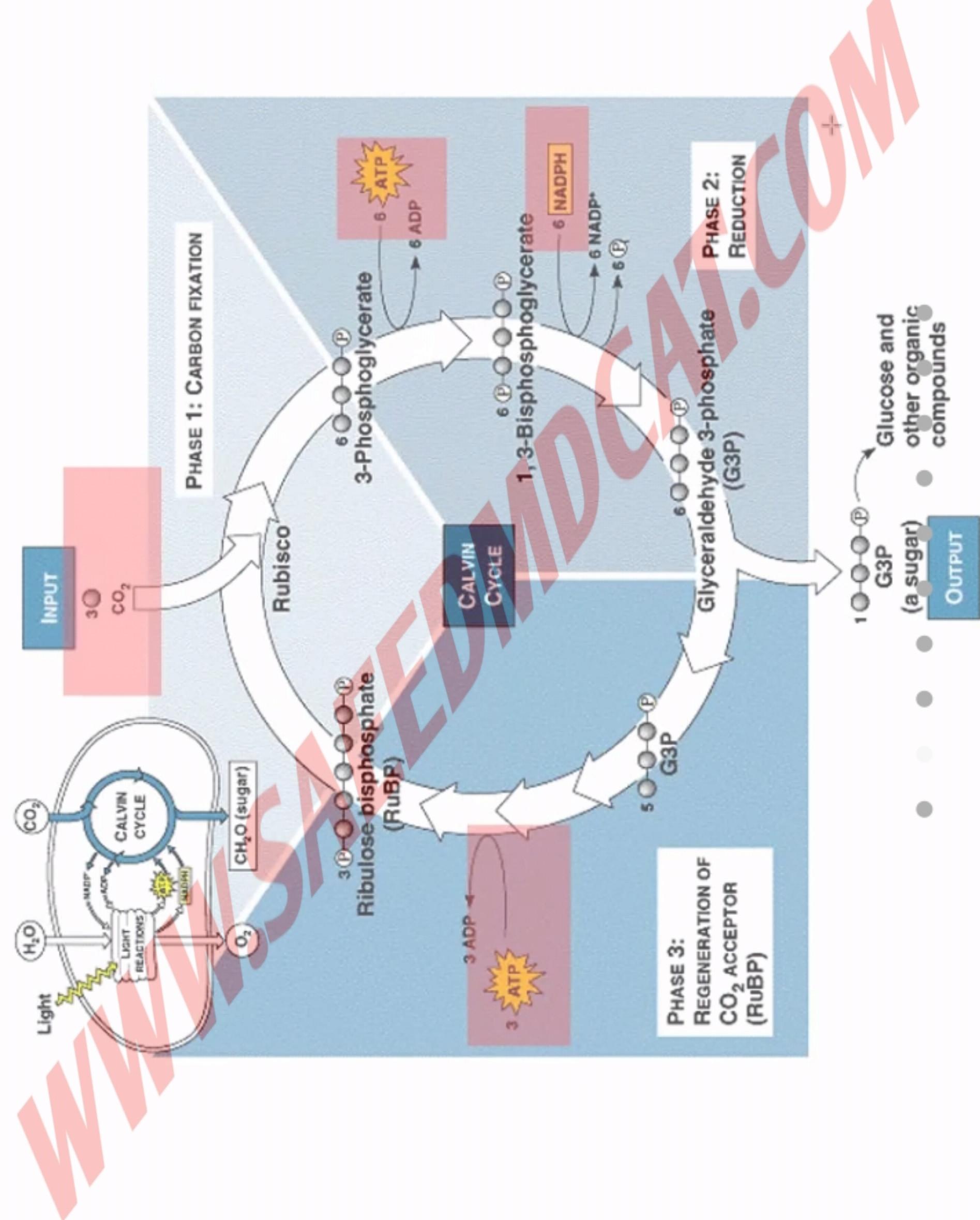
Which of the following is not a reactant of the Calvin Cycle?

- (a) NADPH
- (b) ATP
- (c) Oxygen
- (d) Carbon dioxide

C

O

C.



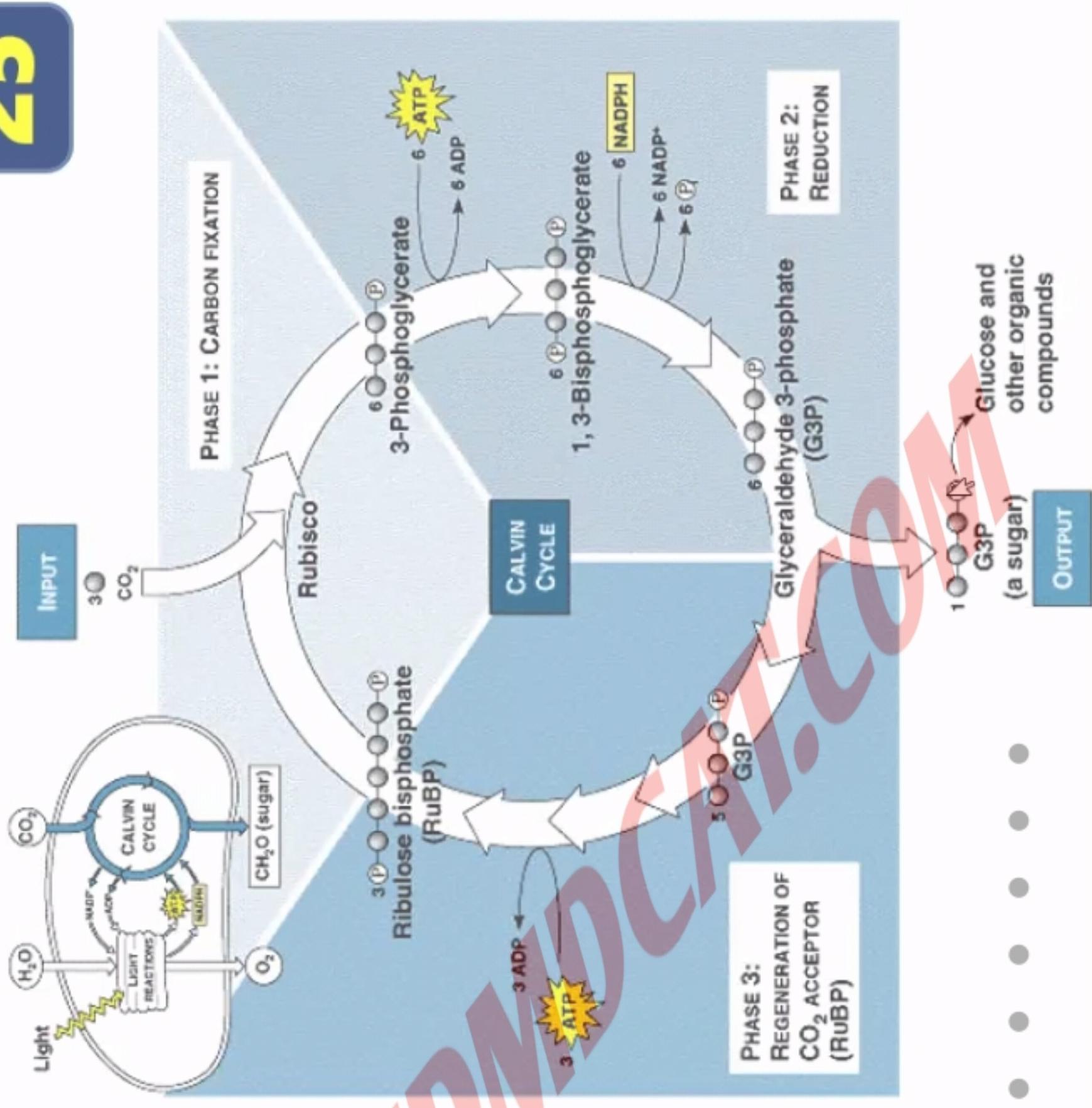
24

When carbon first enters the Calvin cycle, what molecule does it combine with?

- (a) 3PG
- (b) G₃P
- (c) **RuBP**
- (d) ATP

C O C.

25



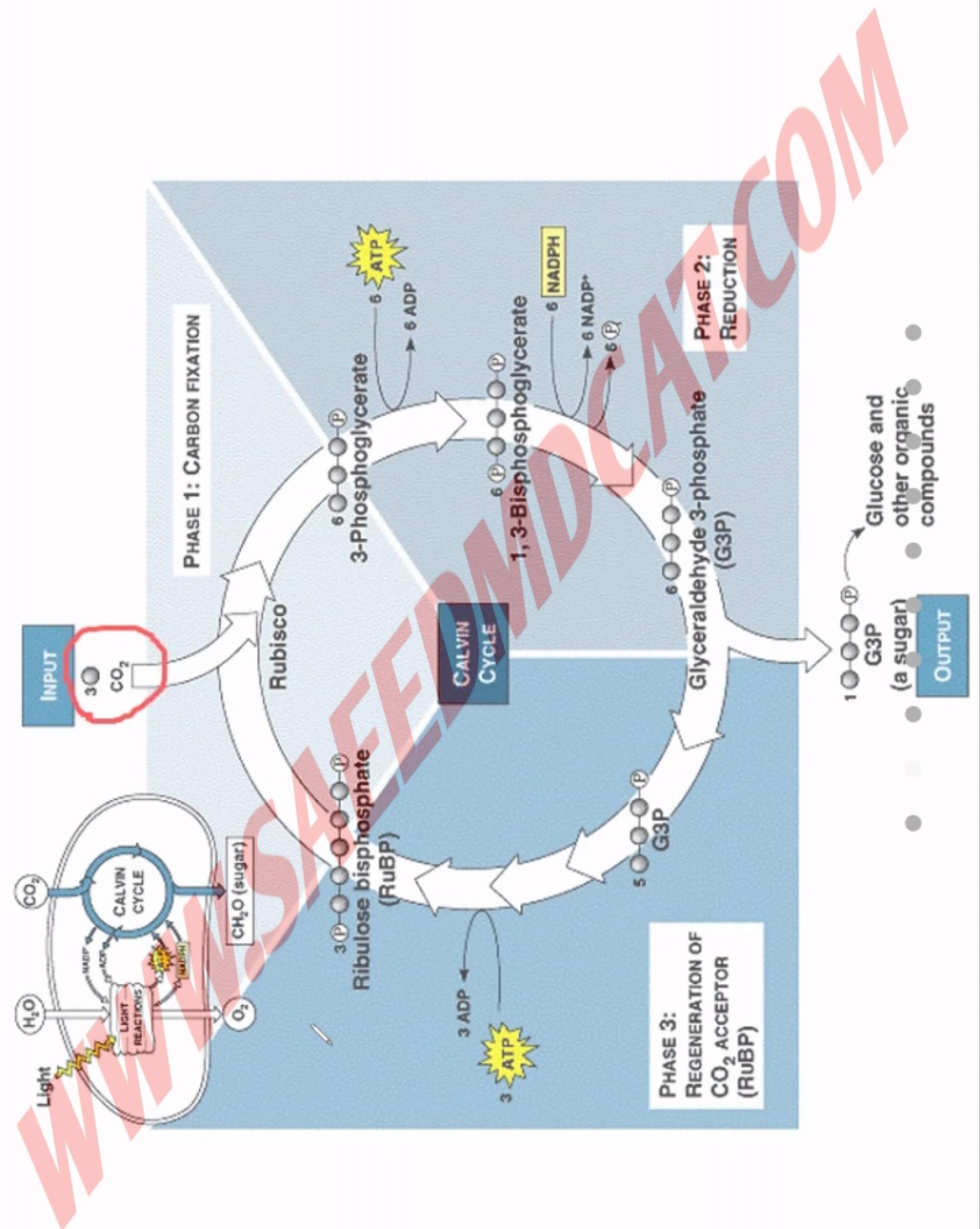
Calvin cycle is involved in the:
(a) Synthesis of carbohydrates

- (b) Synthesis of NADPH
- (c) Synthesis of ATP
- (d) Hydrolysis of water

26

How many molecules of 3-phosphoglycerate is synthesized from the reaction between 6CO_2 and 6RuBp ?

- (a) 3
- (b) 6
- (c) 12
- (d) 18



U O C

27

How many ATP and NADPH molecules are used in the reduction phase to convert 3-phosphoglycerate to glyceraldehyde-3-phosphate?

(a) **6 ATP & 6 NADPH**

- (b) 6 ATP only
- (c) 12 ATP & 12 NADPH
- (d) 12 NADPH only

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How many glyceraldehyde-3-phosphates are required to synthesize one glucose molecule?

(a) 2

(b) 3

(c) 6

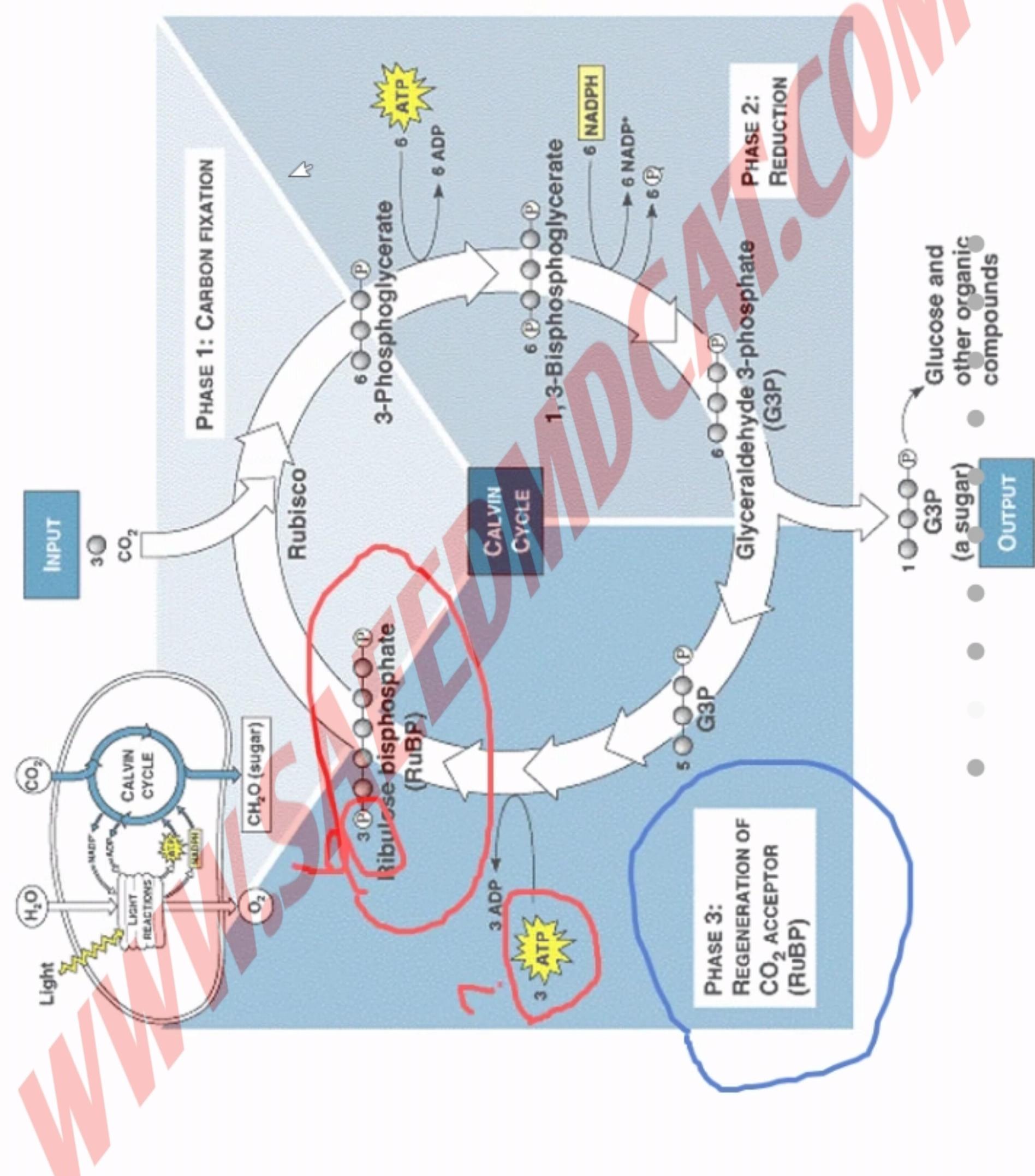
(d) 12

C₃ cycle involves all the steps except:

- (a) Reduction
- (b) Carbon fixation
- (c) ATP synthesis**
- (d) Regeneration of RuBP

How many ATP and NADPH are used for the regeneration of 6RuBp molecules?

- (a) 12ATP and 6NADPH
- (b) 12ATP only
- (c) 6ATP and 6NADPH
- (d) 6ATP only**



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The initial CO_2 acceptor in C_3 cycle is:

(a) 3-Phosphoglycerate

(b) RuBP

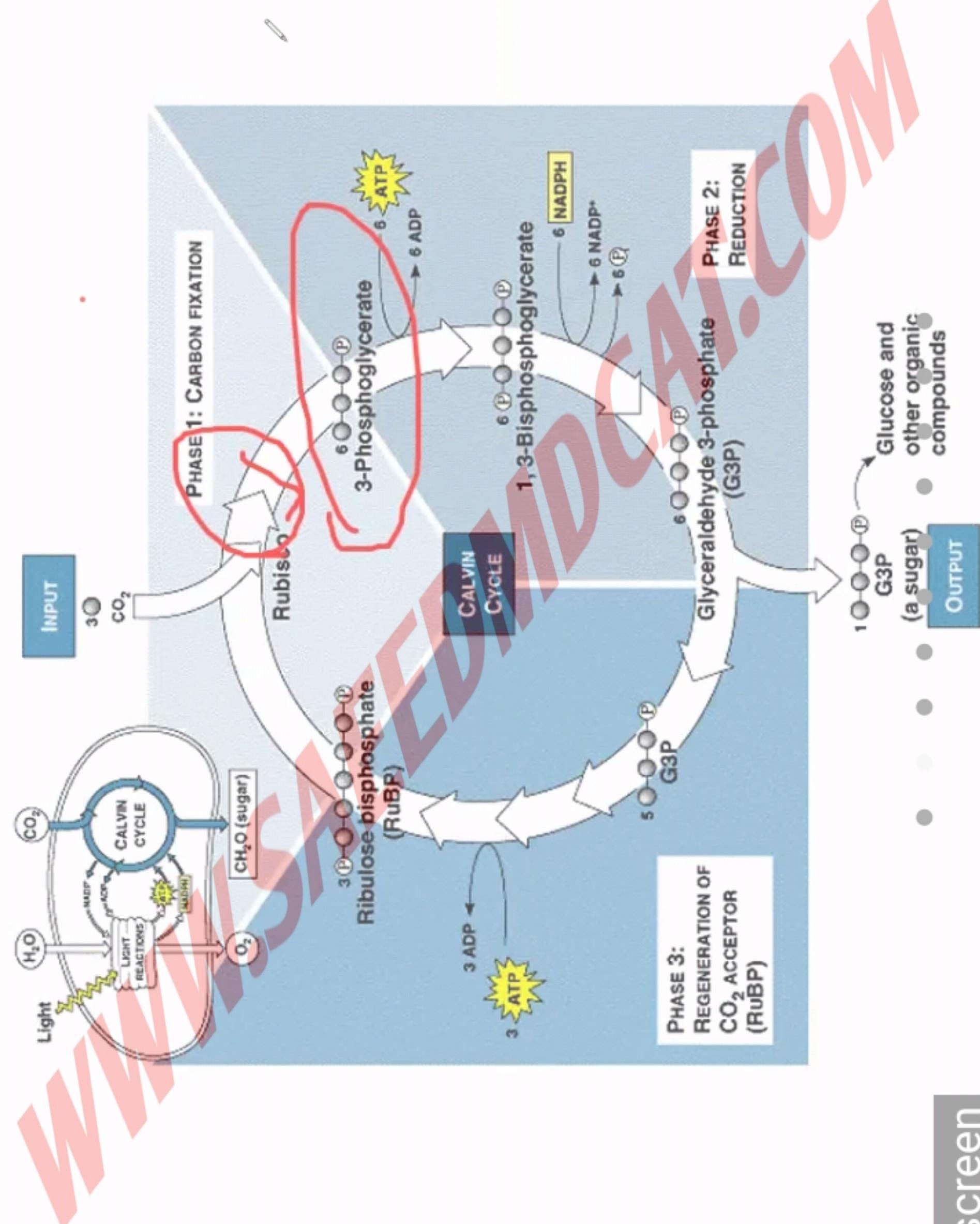
(c) Rubisco

(d) G_3P

The unstable 6-carbon compound in Calvin cycle breaks down into:

(a) Two 3-carbon compounds

- (b) Three 2-carbon compounds
- (c) Six 1-carbon compounds
- (d) Six 3-carbon compounds



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ATPs produced in each Calvin cycle are:

(a) 0

(b) 1

(c) 3

(d) 6

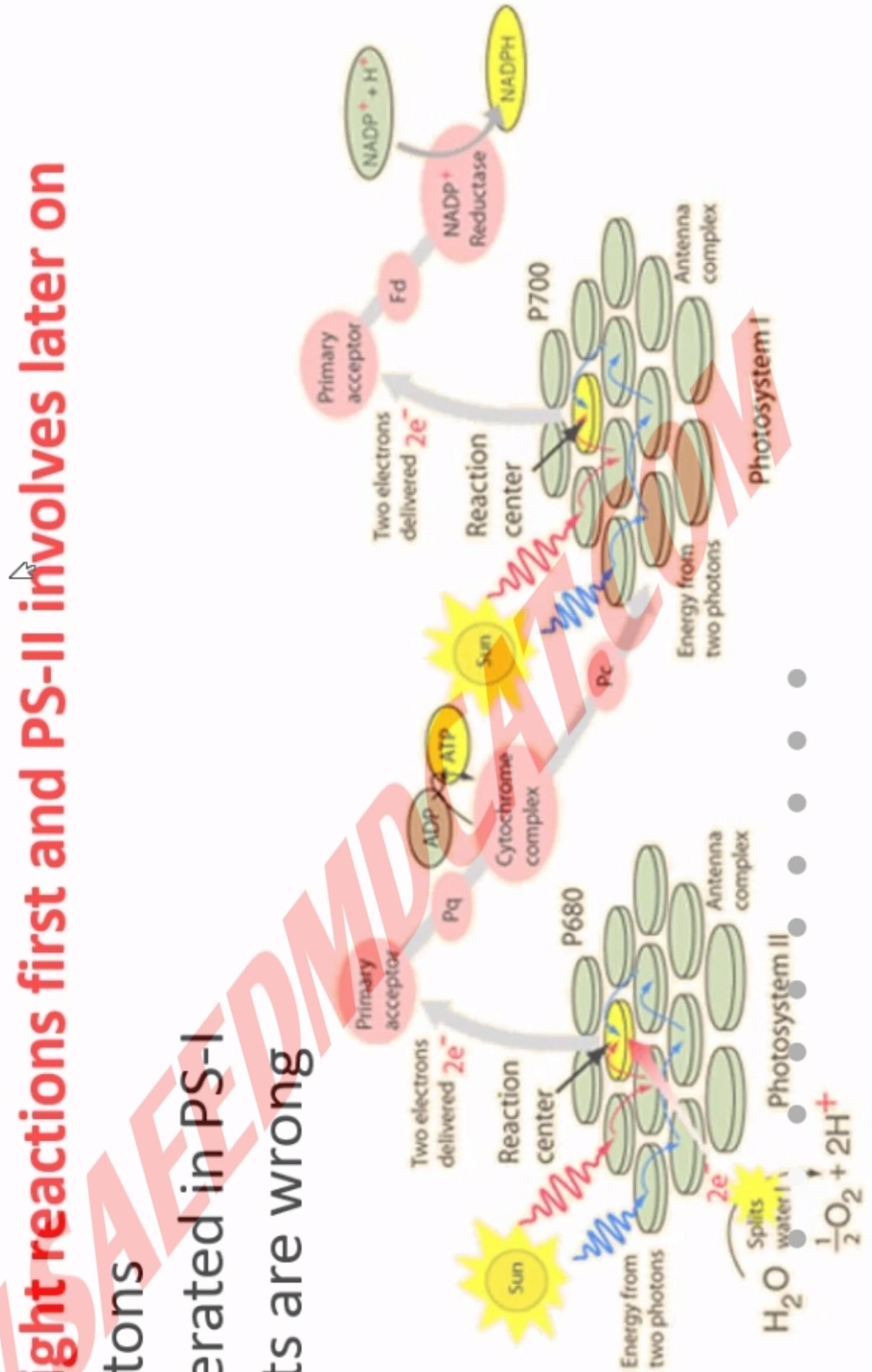
34

For the formation of one ATP and one NADPH, the Z-scheme will run:

- (a) 1 time
- (b) 2 times
- (c) 3 times
- (d) 6 times

Choose the wrong statement:

- (a) PS-I involves in light reactions first and PS-II involves later on
- (b) PS-I absorbs photons
- (c) Oxygen is not liberated in PS-I
- (d) All the statements are wrong



How many G_3P molecules are yielded during one Calvin cycle?

(a) 1

(b) 2

(c) 5

(d) 6

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How many CO_2 molecules are yielded during one Calvin cycle?

(a) 0

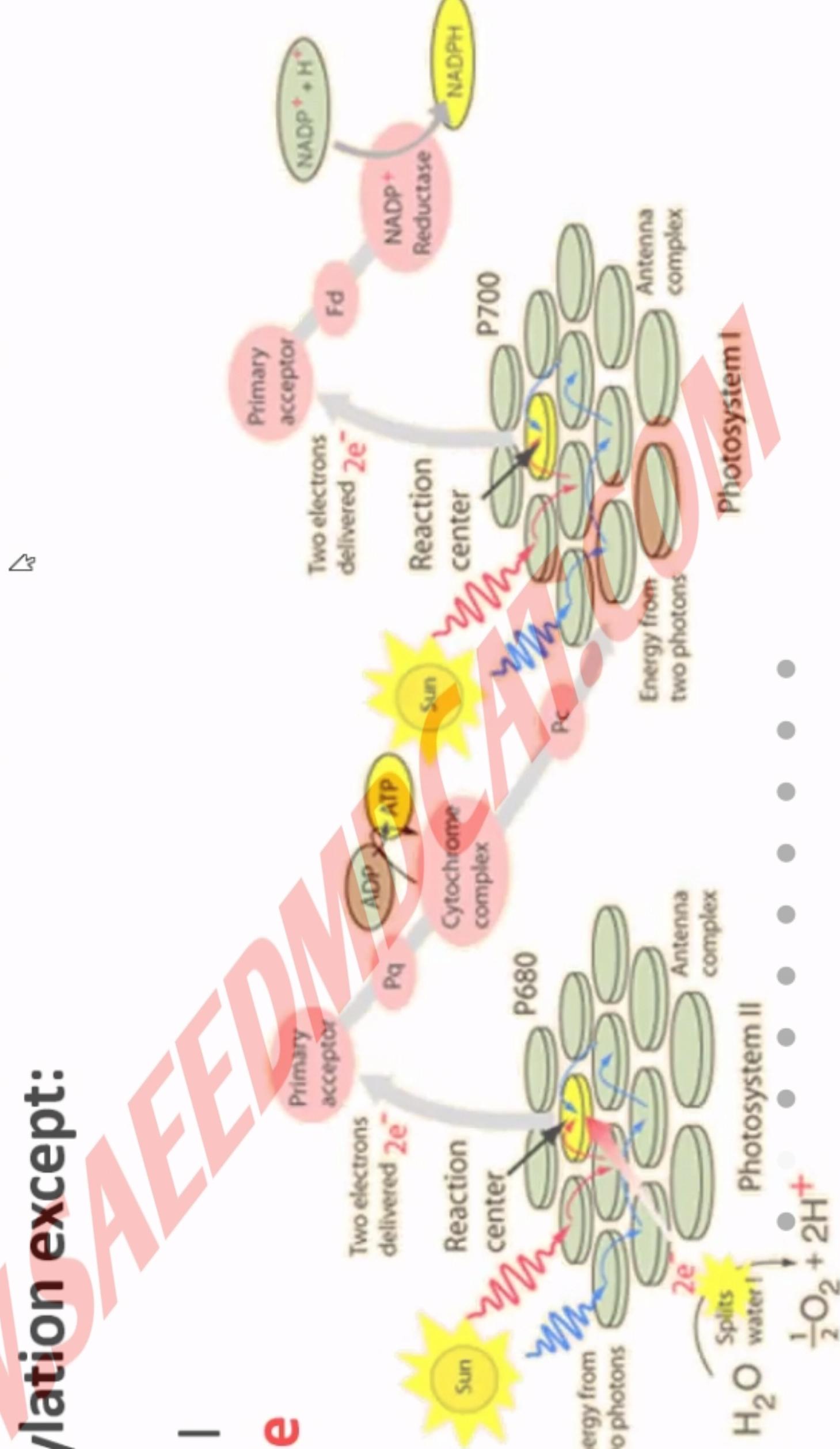
(b) 1

(c) 3

(d) 6

All of the following are involved in both cyclic and non-cyclic photophosphorylation except:

- (a) Plastocyanin
- (b) Photosystem I
- (c) Plastoquinone**
- (d) Ferredoxin



During chemiosmosis of photosynthesis, the pumping of protons is:

- (a) Across outer membrane of chloroplast
- (b) Across inner membrane of chloroplast
- (c) From stroma to thylakoid lumen**
- (d) From thylakoid lumen to stroma



The pathway that will produce oxygen during photosynthesis is:

- (a) Electron transport pathway
- (b) Non-cyclic electron pathway**
- (c) Light-independent reactions
- (d) Cyclic electron pathway

